Remarks: General

A petition under 37 CFR §1.136 for a two-month extension of time to respond the Examiner's action is enclosed, the fee for which should be charged to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company). If any fee other than or in addition to that mentioned above is required to authorize or obtain consideration of this response, please charge such fee to Deposit Account No. 04-1928.

Claims 35~62 having been canceled, Claims 11~21 and 34 are now active in the application. Applicant hereby requests reconsideration and further examination of the application in view of Applicant's explanation below of the reasons why the pending claims are in condition for allowance.

Remarks: Detailed Action

The Examiner has rejected Claims 11~21 and 34 under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 4,171,298 ("Minagawa").

Minagawa discloses 2-orthoalkylhydroxybenzenepropane-1,3-diol compounds. One of the possible forms that the propane diol compounds can take is shown by the structure in column 15 at lines 50~60. In this form, 2~4 "doubly linked" propane diol compounds are joined by an R^6 radical. R^6 is a multivalent group serving as a junction to link together 2~4 phosphorus ester groups through an oxygen atom of each phosphorus ester group. (See column 16, lines 12~14.)

Claims 11~21 are directed to a polymeric composition, and Claim 34 is directed to a process involving the preparation and reaction of a phosphorus-containing polymer. A polymer is defined as a "macromolecule formed by the chemical union of five or more identical combining units called monomers." (See *Hawley's Condensed Chemical Dictionary*, Eleventh Edition, 1987, page 938, copy attached).

While the column 15 structure shown in Minagawa may appear to be a polymer, it is actually nothing more than a dimer, with the possibility that it could be a trimer or tetramer depending on the

value of p. While the structure shows the residue of two phosphorus esters, with the possibility that two more could be present depending on the value of p, there is no teaching or suggestion that an R^6 be employed that would permit the presence of more than four phosphorus ester residues. None of the phosphorus-containing examples shown in Table 1, columns 27~32, involve the use of a tetravalent R^6, and Minagawa thus expresses no preference for compounds higher than a trimer. Any notion that a polymer may be found or suggested in Minagawa could only be based on the hindsight gained from reading Applicant's disclosure.

In view of the above distinctions between Minagawa and the subject matter of Claims 11~21 and 34, Applicant respectfully requests that the Examiner withdraw the rejection of those claims under 35 U.S.C. §103(a).

In view of the foregoing, Applicant submits that all of the Examiner's objections and rejections have been properly traversed, and that the claims are in condition for allowance, request for which is hereby respectfully made.

Respectfully submitted,

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Hawley's Condensed Chemical Dictionary

ELEVENTH EDITION

Revised by

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and
Richard J. Lewis, Sr.

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polyisobutylene. See polybutylene.

polyisocyanurate. See isocyanurate.

polyisoprene. $(C_5H_8)_n$. The major component of natural rubber, also made synthetically. Forms are stereo-specific cis-1,4- and trans-1,4-polyisoprene. Both can be produced synthetically by the effect of heat and press on isoprene in the presence of stereospecific catalysts. Natural rubber is cis-1,4-; synthetic cis-1,4- is sometimes called synthetic natural rubber. Trans-1,4-polyisoprene resembles gutta-percha. Polyisoprene is thermoplastic until mixed with sulfur and vulcanized. Supports combustion.
See rubber, natural and synthetic. See catalyst, stereospecific.

"Polylan."[493] TM for a polyunsaturated ester of linoleic acid and lanolin alcohols. An amber, viscous, oily liquid; soluble in mineral oil, castor oil, anhydrous ethanol, isopropanol, ethyl acetate; insoluble in water.
Use: Hydrophobic conditioner in cosmetics and pharmaceuticals.

"Poly-Lease."[175] TM for an aerosol mold release and parting agent for plastics and rubber materials based on a low molecular weight polyethylene lubricant. The usual precautions for shipping and handling aerosol containers apply.

"Polylite."[36] TM for a group of 100% reactive alkyd resins, dissolved in styrene and other monomers. Highly diversified applications both alone and in combination with such materials as fibrous glass. This group also includes resins for use with diisocyanate to form rigid or flexible polyurethane foams.

"Polymeg."[224] TM for polytetramethylene ether glycols. Available in three molecular weight ranges: 1000, 2000, and 3000.
Properties: Waxy solids which melt to clear, viscous liquids at 37C. On supercooling (or nucleation) the liquid resolidifies, d 0.985 (1000 mw) to 0.982 (3000 mw) at 35C, soluble in aromatic and chlorinated hydrocarbons, slightly soluble in water, solubility decreasing with increasing molecular weight.
Use: Polyurethane technology.

polymer. A macromolecule formed by the chemical union of five or more identical combining units called monomers. In most cases the number of monomers is quite large (3500 for pure cellulose), and often is not precisely known. In synthetic polymers this number can be controlled to a predetermined extent, e.g., by shortstopping agents. (Combinations of two, three, or four monomers are called, respectively, dimers, trimers, and tetramers and are known collectively as oligomers). A partial list of polymers by type is as follows:

I. Inorganic siloxane, sulfur chains, black phosphorus, boron-nitrogen, silicones
II. Organic
  1. Natural
    (a) Polysaccharides starch, cellulose, pectin, seaweed gums (agar, etc.), vegetable gums (arabic, etc.).
    (b) Polypeptides (proteins) casein, albumin, globulin, keratin, insulin, DNA
    (c) Hydrocarbons rubber and gutta percha (polyisoprene)
  2. Synthetic
    (a) Thermoplastic elastomers (unvulcanized), nylon, polyvinyl chloride, polyethylene (linear), polystyrene, polypropylene, fluorocarbon resins, polyurethane, acrylate resins
    (b) Thermosetting elastomers (vulcanized), polyethylene (crosslinked), phenolics, alkyds, polyesters
  3. Semisynthetic cellulosics (rayon, methylcellulose, cellulose acetate), modified starches (starch acetate, etc.)

See also following entries.

polymer, addition. See addition polymer.

polymer, atactic. See atactic.

polymer, block. See block polymer.

polymer, condensation. A polymer formed by a condensation reaction.

polymer, electroconductive. A polymer or elastomer made electrically conductive by incorporation of a substantial percentage of a suitable metal powder, (e.g., aluminum) or acetylene carbon black, the proportion used must be high enough to permit the particles to be in contact with one another in the mixture. Polyelectrolytes such as ion-exchange resins, salts of polyacrylic acid, and sulfonated polystyrene are electroconductive in the presence of water. Pyrolysis of polyacrylonitrile makes it electrically conductive without impairment of its structure. Polyacetylene and a few related polymers are made conductive by various doping agents such as arsenic pentafluoride and iodine.
See also polyacetylene.

polymer, graft. See graft polymer.

polymer, high. An organic macromolecule composed of a large number of monomers. The molecular weight may rang
millions (for some polyp
polymers are exemplified
and rubber $(C_5H_8)_n$. Pr
polymer combinations of
The dividing line between
is considered to be in th
to 6000 mw.

Synthetic high polym
ins") include a wide vari
properties ranging from
and elastic. Addition of
as fillers, colorants, etc.,
number of products coll
High polymers are the
synthetic fibers, coating
varnishes), adhesives, s
having special elastic pr
bers, or elastomers.

Synthetic polymers in
(1) by thermal behavior
thermosetting; (2) by
amino, alkyd, acrylic, vi
epoxy, urethane, siloxa
lecular structure, i.e.,
linear, crosslinked, bloc
polymers are product
two or more polymers
butadiene).
See also crosslinking; an

polymer, inorganic. A p
chain contains no carb
behavior similar to tha
can be developed, i.e.
crosslinking, as in silic
element silicon replace
chain; substituent group
ing highly useful polym
polymers are black phc
fur all of which can f
under special condition
little or no commercial
authorities consider sil
organic, since their sub
prised of methyl group

polymer, isotactic. A t
in which groups of at
of the backbone struct
above or all below th
chain, when the latter
See polymer, stereospec